IN THE CLAIMS

Please amend the claims as follows:

1. (Currently Amended)   A method for performing channel estimation within a communication system implementing orthogonal frequency division multiplexing (OFDM), comprising:

receiving an OFDM symbol from a communication channel, said OFDM symbol having a plurality of data subcarriers and a plurality of pilot symbols;

identifying subcarriers of interest, wherein the subcarriers of interest are a subset of the plurality of data subcarriers;

generating a pilot vector using pilot symbols from said OFDM symbol;

obtaining a first interpolation vector corresponding to a first subcarrier of interest from a plurality of stored interpolation vectors; and

calculating a dot product of said pilot vector and said first interpolation vector to generate an equalization coefficient for said first subcarrier of interest.

2. (Original)   The method of claim 1, comprising:

obtaining an interpolation vector corresponding to each subcarrier of interest; and

calculating a dot product of said pilot vector and an interpolation vector for each subcarrier of interest to generate an equalization coefficient for each subcarrier of interest.

3. (Original)   The method of claim 1, wherein:

generating a pilot vector includes selecting a set of pilot symbols from said OFDM symbol based upon the identities of said subcarriers of interest.

4. (Original)   The method of claim 1, wherein:

generating a pilot vector includes using all pilot symbols within said OFDM symbol.

5. (Original)   The method of claim 1, wherein:

obtaining a first interpolation vector includes selectively retrieving said first interpolation vector from a memory.

6. (Original)   The method of claim 1, wherein:

identifying subcarriers of interest includes identifying subcarriers associated with a first user within the communication system.

7. (Currently Amended)   A communication device for use in a communication system implementing orthogonal frequency division multiplexing (OFDM), comprising:

means for receiving an OFDM symbol from a communication channel, said OFDM symbol having a plurality of subcarriers and a plurality of pilot symbols;

means for extracting a group of pilot symbols from said OFDM symbol to form a pilot vector;

means for acquiring ~~an~~ a stored interpolation vector associated with a first subcarrier of interest, wherein the first subcarrier of interest is a subset of the plurality of subcarriers; and

means for performing a mathematical operation using said interpolation vector and said pilot vector to generate a first equalization coefficient for said first subcarrier of interest.

8. (Original)   The communication device of claim 7, wherein:

said means for performing a mathematical operation includes means for calculating a dot product of said pilot vector and said interpolation vector.

9. (Original)   The communication device of claim 7, comprising:

means for acquiring an interpolation vector associated with each of a set of subcarriers of interest; and

means for calculating a dot product of said pilot vector and each of said interpolation vectors acquired by said means for acquiring to generate equalization coefficients for said set of subcarriers of interest.

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Title: SPARSE CHANNEL ESTIMATION FOR ORTHOGONAL FREQUENCY DIVISION MULTIPLEXED SIGNALS
Assignee: Intel Corporation

10. (Original) The communication device of claim 9, wherein:

said subcarriers within said set of subcarriers of interest are associated with a single user within the communication system.

11. (Original) The communication device of claim 7, wherein:

said communication device is a portable communicator.

12. (Original) The communication device of claim 7, wherein:

said communication device is a communication base station.

13. (Original) The communication device of claim 7, wherein:

said communication device includes a wireless OFDM transceiver.

14. (Original) The communication device of claim 7, wherein:

said means for acquiring an interpolation vector includes means for selectively retrieving an interpolation vector from a memory.

15. (Original) The communication device of claim 7, wherein:

said means for extracting a group of pilot symbols includes means for extracting all of said pilot symbols in said OFDM symbol for inclusion within said pilot vector.

16. (Original) The communication device of claim 7, wherein:

said means for extracting a group of pilot symbols includes means for extracting a subset of said pilot symbols in said OFDM symbol for inclusion within said pilot vector.

17. (Original) The communication device of claim 7, wherein:

said means for acquiring an interpolation vector and said means for performing a mathematical operation are each implemented in software within a digital processing device.

18. (Original) The communication device of claim 7, comprising:

means for processing a first subcarrier of interest within said OFDM symbol using said first equalization coefficient.

19. (Currently Amended)   A communication device for use in a communication system implementing orthogonal frequency division multiplexing (OFDM), comprising:

a receiver to receive an OFDM symbol from a communication channel, said OFDM symbol having a plurality of subcarriers and a plurality of pilot symbols;

a subcarrier tracking unit to track subcarriers of interest, wherein the subcarriers of interest are a subset of the plurality of subcarriers;

a pilot vector unit to assemble a pilot vector using pilot symbols from the OFDM symbol;

an interpolation vector retrieval unit to retrieve an interpolation vector for each of said subcarriers of interest from a plurality of subcarriers stored in a memory; and

a computation unit to determine a channel estimate using said pilot vector and said interpolation vectors retrieved by said interpolation vector retrieval unit.

20. (Original) The communication device of claim 19, wherein:

said subcarrier tracking unit tracks subcarriers associated with a particular user.

21. (Original) The communication device of claim 19, wherein:

said pilot vector unit selects pilot symbols from the OFDM symbol based on said subcarriers of interest indicated by said subcarrier tracking unit.

22. (Original) The communication device of claim 19, wherein:

said pilot vector unit assembles pilot vectors of varying length.

23. (Original) The communication device of claim 19, wherein:

said interpolation vector retrieval unit retrieves interpolation vectors that each have a length that is equal to that of said pilot vector.

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24. (Original) The communication device of claim 19, wherein:

said computation unit includes a digital processor to calculate a dot product of said pilot vector and an interpolation vector.

25. (Currently Amended)   A computer readable medium having program instructions stored thereon for implementing a method to determine a channel estimate within an orthogonal frequency division multiplexing (OFDM) communication system when executed within a digital processing device, said method comprising:

determining a set of subcarriers of interest from an OFDM symbol having a plurality of data subcarriers and a plurality of pilot symbols, wherein the set of subcarriers of interest is a subset of the plurality of data subcarriers;

forming a pilot vector using pilot symbols from an the OFDM symbol;

obtaining a first interpolation vector corresponding to a first subcarrier of interest from a plurality of stored interpolation vectors; and

calculating a dot product of said first interpolation vector and said pilot vector to generate an equalization coefficient for said first subcarrier of interest.

26. (Original) The computer readable medium of claim 25, wherein:

determining a set of subcarriers of interest includes identifying a user and determining a set of subcarriers assigned to said user.

27. (Original) The computer readable medium of claim 25, wherein:

forming a pilot vector includes selecting pilot symbols for inclusion within said pilot vector based on said set of subcarriers of interest.

28. (Original) The computer readable medium of claim 25, wherein:

obtaining a first interpolation vector includes retrieving said first interpolation vector from a memory.

29. (Original) The computer readable medium of claim 25, wherein said method comprises:

obtaining interpolation vectors for each subcarrier within said set of subcarriers of interest; and

calculating a dot product of said pilot vector and each of said interpolation vectors to generate equalization coefficients for each subcarrier within said set of subcarriers of interest.